Theoretical Reserve = (GBV - FNS) - ((GBV - ANS)*(ARL/ASL)),

where

GBV = Gross book value of plant (i.e. original cost)
FNS = Future net salvage
ANS = Average net salvage
ASL = Average service life
ARL = Average remaining life

This formula is identical to the formula used in the above example with the exception that it adjusts for net salvage. The left hand term in the above equation is the net value of future retirements, which are equal to the original cost of the plant (GBV) less the net value of salvage when the plant is retired (FNS). The right hand term is the value of future depreciation accruals (expenses). The difference between future retirements and future accruals is equal to the theoretical reserve; i.e. what the book depreciation reserve should equal if the plant is to be fully depreciated by the end of its useful life. This is a prospective measure because the theoretical reserve looks forward in time to infer how large the current book reserve must be in order to insure that all equipment will be fully depreciated. In practice, this formula is applied to large groups of equipment and plant rather than a single item; hence, service lives and net salvage values are averages over a large number of individual items. Because the salvage value of a given item may change over time (e.g. consider the salvage value of a one year old computer vs. a ten year old computer), the theoretical reserve formula adjusts for differences between average net salvage and future net salvage.

FCC/State Depreciation Process

The FCC has the authority to prescribe depreciation rates for telephone carriers.[13] The process by which these depreciation rates are set involves several steps.[14] Each year approximately one-third of the large local exchange telephone companies submit to the FCC their proposals for new depreciation rates. These proposals are based upon a depreciation study that they file with the proposal. The depreciation study analyzes both recent historical patterns and forecasts of equipment service lives, net salvage, and mortality dispersion patterns. The FCC staff evaluates each carrier's proposal and prepares its own recommendations. The differences between the FCC staff and the carrier are resolved at a three-way meeting. This three-way meeting is a meeting between the FCC staff, the carrier, and the staff from the affected state public service commissions to settle differences in the basic factors that determine depreciation rates.[15] After the three-way meeting discussions are completed, the FCC staff reviews its recommendations and issues a public notice listing its findings. After comments and replies are received back from each participant, an order is drafted for Commission action.

---

[13]However, since the Louisiana PSC prevailed in its litigation opposing federal preemption of depreciation policy, the state regulatory agencies have been under no obligation to follow the same depreciation rates or policies as the FCC. Louisiana Public Service Commission v. FCC, 106 S. Ct. 1890 (1986).

[14]For a more detailed discussion of the process by which depreciation rates are set, see FCC Depreciation Study Guide for 1995. The above discussion is based in part on FCC, Accounting and Audits Division, "Report on Telephone Industry Depreciation, Tax, and Capital/Expense Policy," April 15, 1987.

[15]In recent years a number of states have stopped attending the three-way meetings. Hence, many of the meetings are now two-way meetings between the FCC staff and the carrier.

One of the reforms resulting from Property Depreciation (1980) is that in evaluating each carrier's proposal, the FCC staff not only evaluates the historical pattern of retirements for a given category of plant, but also evaluates company investment plans, technological developments, and other future-orientated analyses.[16] Thus, if a carrier proposed a dramatic decrease in plant service lives, the FCC would look to either recent patterns of retirements, forecasts of future retirements, or company investment plans for evidence that this change had occurred or was likely to occur in the next several years. Without such evidence, the FCC would be unlikely to support the carrier's proposal.[17]

The FCC requires the RBOCs (and other large LECs) to file estimates of their book depreciation reserves and theoretical depreciation reserves as part of each carrier's triennial depreciation study. In addition, during the last several years these LECs have been required to file an annual estimate of their theoretical reserves by plant account. These filings enable the FCC to monitor the magnitude and direction of the total reserve deficit.

---

[16]FCC, Accounting and Audits Division, "Report on Telephone Industry Depreciation, Tax and Capital/Expense Policy," April 15, 1987. Two examples of future-orientated analyses that a carrier can submit with its depreciation study are life cycle and Fisher-Pry Technology substitution theory.

[17]As Ameritech has noted, less than 30% of the time prescribed life projections are within 25% of historical mortality factors (Ameritech Comments, "Simplification of the Depreciation Process," 1993.) Hence, future-oriented analyses appear to play an important role in FCC decisions about service lives.

RBOCs' Reserve Deficit based on FCC Prescribed Life and Salvage Values

MiCRA calculated the total theoretical reserve deficit for the seven RBOCs from the 1994 theoretical reserve study filed by each RBOC with the FCC. The theoretical reserve deficits for the RBOCs are shown in Table 4.[18] The RBOCs theoretical reserve studies provide raw data on service lives, net salvage values, gross book values and depreciation reserves. The service lives and net salvage values in the RBOCs' annual theoretical reserve studies are prescribed by the FCC in its triennial depreciation order for the state operations of each RBOC. FCC methodology is to base the service life and salvage values on either recent experience or investment plans submitted by the carriers.

Table 4 indicates that the total depreciation reserve deficit for the RBOCs as of 1994 was $3.16 billion. This indicates that cumulative historical depreciation of current plant is $3.16 billion less than the amount necessary to assure cost recovery given the most recent experience with historical service lives and salvage values, adjusted, where appropriate, for actual investment plans calling for accelerated retirement of plant. Under FCC depreciation policy, unless special

[18]The columns in Table 4 labeled "RBOCs" and "MiCRA" report, respectively, the RBOCs' calculation of the reserve deficit and MiCRA's calculation of the reserve deficit based on the underlying data. This comparison was done in order to verify that MiCRA and the RBOCs were defining and calculating the reserve deficit in the same way. The only differences in the two calculations should be due to rounding, and that is generally true. However, for eight accounts (out of roughly 1000) the reserve deficit as reported by the RBOC is greatly different than the deficit calculated from the FCC's service life and salvage value assumptions. In those cases, the current analysis assumes the reserve deficit claimed by the RBOCs, pending further inquiry into the discrepancy. The total investment affected is tiny.

TABLE 4

1994 Reserve Deficit in Relation to Net Book Value

(All values in $000's)

	RBOCs	MiCRA	Difference Between Two Measures $	%
Gross Book Value of Plant (1/1/94)	200,312,905	200,312,905	0	0.00%
Cummulative Depreciation Reserve	83,608,951	83,608,951	0	0.00%
Net Book Value of Plant (NBV)	**116,703,954**	**116,703,954**	**0**	**0.00%**
Cummulative Depreciation Reserve	83,608,951	83,608,951	0	0.00%
Theoretical Reserve	86,775,286	86,770,432	4,854	0.01%
Reserve Deficit	**(3,166,335)**	**(3,161,482)**	**(4,854)**	**0.15%**
Reserve Deficit as % of NBV	**-2.71%**	**-2.71%**	**-0.00%**	**0.15%**

Sources: 1994 Theoretical Reserve Study filed by each RBOC with FCC.

Notes: MiCRA's estimate of the Theoretical Reserve ("TR") is calculated from the investment, service, and salvage values listed in the 1994 TRS. If there was a large discrepancy between MiCRA's estimate of the TR and the value listed by the RBOC, the RBOC's value of TR was used instead of the calculated value. This situation occurred in only a handful of cases.

amortization policies for the deficit are adopted, the deficit is eliminated by including it in the depreciation to be recovered over the remaining life of the asset class of which the plant is a part. That is, the depreciation deficit is recovered on a levelized basis over the remaining life of the plant. This procedure, adopted in the early 1980s, creates an automatic adjustment in depreciation whenever either recent experience or a bona fide planned change in investment behavior indicates that more rapid depreciation is required.[19]

The reserve deficit in Table 4 is equal to about 1.6% of the gross book value of plant, and only about 2.7% of net book value. Another way to analyze the relative size of the deficit is to compare the reserve deficit to RBOC revenues in 1994. If the reserve deficit was amortized over five years, it would be equal to approximately 1% of the RBOCs' total revenues in 1994.

The depreciation reserve deficit is now tiny compared to its value in the early 1980s. Table 5 compares the reserve deficit over time both for all LECs reporting to the FCC (the first four columns) and for the RBOCs (the last column in Table 5). For all LECs, the reserve deficit has declined from $21 billion in 1983 to $3.3 billion in 1994. As a percentage of the companies' gross book value the reserve deficit has decreased from 13.1% in 1983 to 1.5% in 1994. At the same time, the book reserve ratio (book reserves as a percentage of gross book value) has

---

[19]It is important to understand that the existence of a reserve deficit does not imply that the current depreciation expense is too low. In fact, when remaining life depreciation policy is working well, there will be a reserve deficit when service life assumptions are first reduced. That deficit is then eliminated over time with the new, higher depreciation expense over the (now shorter) expected remaining life of the plant.

TABLE 5

Reserve Deficit Over Time

	ALL LECS 1983 (Actual)	ALL LECS 1986 (Actual)	ALL LECS 1990 (Predicted)	ALL LECS 1994 (Actual)	RBOCS 1994 (Actual)
Gross Book Value of Plant ($000's)	160,000,000	180,000,000	NA	228,172,314	200,371,425
Book Reserve Ratio	20%	28%	35%	41%	42%
Reserve Deficit ($000's)	21,000,000	13,000,000	5,000,000	3,314,926	3,163,020
Reserve Deficit as % GBV	13.1%	7.2%	2.0%	1.5%	1.6%

Sources: Values for 1983, 1986, & 1990 are from United Stated States, Federal Communications Commission, Accounting and Audits Division, "Report on Telephone Industry Depreciation, Tax and Capital/Expense Policy," April 15, 1987. Values for 1994 were calculated by MiCRA from the 1994 Theoretical Reserve Study submitted by the RBOCs to the FCC.

Notes: The values for RBOCs in 1994 are entirely from the 1994 Theoretical Reserve Studies filed with the FCC by large LECs. In other tables presented in this report, MiCRA substituted the values from USWest--Idaho's 1993 Depreciation Study for values from its 1994 Theoretical Reserve Study. The effects of this substitution on the values listed above would be to lower them by the following amounts: GBV of plant, $58.5 mil; the depreciation reserve, $24.1 mil; the theoretical reserve, $20.8 mil; and the reserve deficit, $3.3 mil. The non-RBOCs included in the above totals are GTE, Cinnclanti Bell, Citizens Utilities, and Pacific Telecom.

increased from 20% in 1983 to 41% in 1994.[20] As Table 5 also demonstrates, the RBOCs account for $3.2 billion of the $3.3 billion dollar reserve deficit in 1994 or approximately 97% of the total reserve deficit for all LECs (compare the last two columns in Table 5).

Table 4 reports a very small depreciation reserve deficit, and the discussion above described the "auto-pilot" procedures whereby a reserve deficit is automatically worked down by FCC depreciation policy. This evidence is not consistent with the RBOCs' complaints about a large and growing reserve deficit problem. One possibility is that the RBOCs fundamentally disagree with the service life and salvage value assumptions embodied in the FCC's depreciation orders. As noted above, however, this complaint suffers from the fact that FCC policy grants more rapid depreciation based on an actual investment plan, even if the plan calls for far earlier plant retirement than has been true historically.[21]

RBOCs' Reserve Deficit based on RBOCs' Proposed Life and Salvage Values

An alternative to the FCC's measure of the size of the reserve deficit is to calculate a revised deficit based on the RBOCs' own estimates of service lives and salvage values from the most recent depreciation represcription for each of their state operations. Depreciation is represcribed every three years by the FCC. MiCRA obtained the service lives and salvage values

---

[20]The Commission in Simplification of the Depreciation Prescription Process (1993, p. 8045), noted that the FCC staff had estimated that the reserve ratio should be 42%.

[21]As the Commission pointed out in Simplification of the Depreciation Prescription Process (1993), the FCC gives "...great weight to the companies' future plant investment plans..." in setting depreciation rates (p. 8046).

the RBOCs initially proposed in each depreciation hearing.[22] Table 6 reports the revised depreciation reserve deficit based on the RBOCs' proposals.

Table 6 reports the service life and net salvage values using the RBOCs' triennial depreciation proposals from 1992 to 1994 to calculate the Theoretical Reserve Ratio. This ratio was then applied to the gross book value of plant and book depreciation reserve listed in each RBOC's 1994 Theoretical Reserve Study (TRS) to calculate the dollar amount of the reserve deficit in 1994. Because some plant categories were not comparable between the depreciation proposals and the 1994 TRS, these categories were not included. This led to a very slight reduction of $260 million in the gross book value of plant. To make the comparison as accurate as possible, Table 6 also recalculates the reserve deficit using FCC prescribed service life and salvage values and the same set of plant categories as the RBOC proposals. The reserve deficit increases by less than $2 billion, to $5.04 billion (4.3% of the net book value of plant), if one uses the RBOC proposals instead of the FCC prescribed life and salvage values.

Further analysis is reported in Tables 7 and 8. There, the difference in the reserve deficit based on FCC-prescribed and RBOC-proposed service and salvage assumptions is presented for only the states with depreciation hearings in 1994 (Table 7) and for only the states with depreciation hearings in 1995 (Table 8). The most striking result from these additional two tables is in 1995 when there is a substantial increase in the size of the reserve deficit based on company proposals relative to the size of the reserve deficit based on FCC-prescriptions. The ratio of the

---

[22]The FCC examines depreciation on a state-by-state basis with roughly 1/3 of the states in any given year taking part in the current represcription. As a result, for most RBOCs not all of their state operations are examined in the same year.

TABLE 6

Comparison of 1994 Reserve Deficit: RBOC vs FCC

Deficit under RBOC's Proposed Life and Salvage Values vs FCC's Prescribed Values.
(All values in $000's)

	Company Proposal	FCC Prescribed	Difference Between Two Measures $
Gross Book Value of Plant (1/1/94)	200,052,185	200,052,185	0
Cummulative Depreciation Reserve	83,521,216	83,521,216	0
Net Book Value of Plant (NBV)	**116,530,968**	**116,530,968**	**0**
Cummulative Depreciation Reserve	83,521,216	83,521,216	0
Theoretical Reserve	88,565,937	86,682,780	1,883,157
Reserve Deficit	**(5,044,720)**	**(3,161,563)**	**(1,883,157)**
Reserve Deficit as % of NBV	**-4.33%**	**-2.71%**	**-1.62%**

Sources: FCC Prescribed life and salvage values are from the 1994 Theoretical Reserve Study (TRS) filed by each RBOC with FCC. The company proposed life and salvage values are from the company proposal filed by each RBOC with its triennial depreciation study at the FCC. Plant investment and reserves are from the 1994 TRS.
Notes: Because for some RBOC states, both company proposed and FCC prescribed life and salvage values were not available, a small number of states' accounts had to be excluded from the analysis.

TABLE 7

Comparison of 1994 Reserve Deficit: RBOC vs FCC
RBOC Study Areas Represcribed in 1994

Deficit under RBOC's Proposed Life and Salvage Values vs FCC's Prescribed Values.
(All values in $000's)

	Company Proposal	FCC Prescribed	Difference Between Two Measures $
Gross Book Value of Plant (1/1/94)	52,535,929	52,535,929	0
Cummulative Depreciation Reserve	21,272,035	21,272,035	0
Net Book Value of Plant (NBV)	**31,263,895**	**31,263,895**	**0**
Cummulative Depreciation Reserve	21,272,035	21,272,035	0
Theoretical Reserve	24,779,079	23,636,365	1,142,714
Reserve Deficit	**(3,507,045)**	**(2,364,330)**	**(1,142,714)**
Reserve Deficit as % of NBV	**-11.22%**	**-7.56%**	**-3.66%**

Sources: FCC Prescribed life and salvage values are from the 1994 Theoretical Reserve Study (TRS) filed by each RBOC with FCC. The company proposed life and salvage values are from the company proposal filed by each RBOC with its triennial depreciation study for the FCC. Plant investment and reserves are from the 1994 TRS.
Note: Because for some RBOC states, both company proposed and FCC prescribed life and salvage values were not available, a small number of states' accounts had to be excluded from the analysis.

TABLE 8

1995 Reserve Deficit
RBOC Study Areas Represcribed in 1995

Deficit under RBOC's Proposed Life and Salvage Values vs FCC's Prescribed Values.
(All values in $000's)

	Company Proposal	FCC Prescribed	Difference Between Two Measures $
Gross Book Value of Plant (1/1/95)	104,024,512	104,024,512	0
Cummulative Depreciation Reserve	46,016,574	46,016,574	0
Net Book Value of Plant (NBV)	**58,007,938**	**58,007,938**	**0**
Cummulative Depreciation Reserve	46,016,574	46,016,574	0
Theoretical Reserve	52,391,616	48,091,233	4,300,382
Reserve Deficit	**(6,375,042)**	**(2,074,659)**	**(4,300,382)**
Reserve Deficit as % of NBV	**-10.99%**	**-3.58%**	**-7.41%**
Metallic Cable*			
Reserve Deficit	**(3,575,859)**	**(1,110,046)**	**(2,465,813)**
Net Book Value of Plant (NBV)	**16,041,317**	**16,041,317**	**0**
Reserve Deficit as % of NBV	**-22.29%**	**-6.92%**	**-15.37%**

Sources: FCC Prescribed life and salvage values are from the 1995 Depreciation Study filed by each RBOC with FCC. The company proposed life and salvage values are from the company proposal filed by each RBOC with its triennial depreciation study for the FCC. Plant investment and reserves are from the 1995 Depreciation Study, 2/3 Way Agreement. Only plant accounts with non-zero investment and life parameters have been included in the above table.

Notes: Metallic cable includes accounts 2421 (Aerial Cable), 2422 (Underground Cable), 2423 (Buried Cable), and 2424 (Submarine Cable). If a LEC did not separate metallic cable from non-metallic cable, it was excluded from the metallic cable category. The reserve deficit for accounts 2421-2424 on both metallic and non-metallic cable is $1,246,873,363 (FCC Prescribed) and $4,101,759,470 (Company Proposals).

companies' proposals to the FCC prescribed reserve deficit is a measure of how divergent the RBOCs' views of the future are from the FCC's. Whereas for the sample of all RBOC states represcribed from 1992-1994 (Table 6) this ratio was 1.6; for the sample of RBOC states represcribed in 1994 (Table 7), it fell to 1.48.[23] Thus, during 1994, the RBOCs' and FCC's views of the future seemed to be converging slightly. However, for the RBOC states represcribed in 1995, this ratio increased to 3.07, indicating a dramatic change in the two groups views of the future.

It is therefore important to understand the difference between the RBOC and FCC views on appropriate depreciation. It will turn out that most of the difference in their views is associated with different assumptions about when to replace metallic cable, and especially subscriber metallic cable.

Subscriber Metallic Cable

A very important issue for depreciation policy is the treatment of subscriber metallic cable. According to a recent Oregon study of costing based on forward-looking technology, copper is always the least-cost technology for the distribution loop and, in most cases, for the feeder portions of the subscriber loop as well.[24] This would imply that the RBOCs' interest in replacing

---

[23]If one compares the RBOC-proposed and FCC-prescribed reserve deficits across years, limiting the comparison to the RBOC operative represcribed in that year, the ratios are 2.20, 2.23, 1.48 and 3.07 for 1992-95, respectively.

[24]"Telecommunications Building Block--Cost Report." Oregon Public Utility Commission workshop paper dated July 1993, vol 2, section 4, p. 3. The Oregon study found that in 75% of cases a copper distribution and copper feeder loop was the least-cost technology, and in 25% of

copper with fiber for remaining portions of the subscriber loop may well be related to a desire to provide other services, not to cost-efficiently provide basic local service on the most efficient basis. Therefore, it would be interesting to know two things: first, how much of the difference between the reserve deficit based on RBOC and FCC parameter assumptions is due to differences in the treatment of subscriber metallic cable? And second, for the estimates based on FCC parameter assumptions, how much of the deficit is due to subscriber metallic cable?[25]

Only three RBOCs break out metallic cable accounts into subscriber and interoffice categories in their depreciation studies. These three RBOCs account for two-thirds of the 1994 reserve deficit for all RBOCs, calculated using FCC parameter assumptions. For the three RBOCs, Tables 9, 10, 11 and 12 show the reserve deficit overall and the portion due to subscriber

---

cases a copper distribution loop and fiber feeder loop was the least-cost technology for a subscriber loop carrier system.

[25]The second question is important because FCC cross-subsidy "protections" will, in some cases, legitimize gross cross-subsidy. If RBOCs are actually replacing, or have bona fide plans to replace, subscriber metallic cable with fiber, FCC accounting procedures can legitimize cross-subsidy. Under current FCC policy, the costs of shared resources (such as subscriber loop) are apportioned among services by relative use. Although the tariff rules for video dial tone (VDT) service (fiber to the home) have not been finalized yet, the tentative findings of the FCC are that VDT service will be subject to the new services test, with a share (to be determined in the future) of installation, excess capacity and overhead costs born by telephony customers (CC Docket No. 87-266). In VDT filings by SNET for Connecticut and Bell Atlantic for NJ, these companies have proposed that the share allocated to telephony customers has been between 50-75%, depending on how the shares are measured. Thus, customers desiring only basic telephone service will be apportioned a part of the costs of local loop reconfiguration even though the investment does not provide them any benefits. Protection against cross-subsidy requires that basic service customers pay no more than the costs of the existing system with in-place metallic subscriber cable. Since FCC policy subsidizes installation of fiber on the subscriber portion of the local loop, the actual practice or investment plans of the RBOCs will likely include more subscriber metallic cable replacement than is appropriate. As a result, the current depreciation deficit based on FCC parameters may well overstate the true deficit in a subsidy-free environment.

TABLE 9

1994 Reserve Deficit for Metallic Cable Accounts: Subscriber vs. Interoffice.
(Based Upon FCC Prescribed Values)

For subset of RBOCs that separately report subscriber & interoffice investment.*

(All values are in $000's)

	Metallic Cable Accounts				
	AERIAL	UNDERGND	BURIED	SUBMARINE	
	2421	2422	2423	2424	Total
Gross Book Value of Plant					
Subscriber	7,184,810	6,374,606	8,622,045	5,584	22,187,045
Interoffice	173,044	810,150	330,711	1,983	1,315,887
Depreciation Reserve					
Subscriber	3,350,069	2,870,434	3,936,890	4,428	10,161,821
Interoffice	144,315	608,950	209,936	1,430	964,632
Theoretical Reserve					
Subscriber	3,647,868	3,220,319	3,710,771	4,114	10,583,072
Interoffice	167,799	748,904	245,555	1,490	1,163,748
Reserve Deficit					
Subscriber	(297,799)	(349,885)	226,119	314	(421,251)
Interoffice	(23,483)	(139,955)	(35,619)	(59)	(199,116)

Sources: 1994 Theoretical Reserve Study filed by each RBOC with the FCC.

*Above table based on metallic cable accounts from the following RBOCs: NYNEX (2421, 22,23), Pacific Telesis (2421, 22, 23), Southwestern Bell (2422, 23), New England Bell (2424).

TABLE 10

1994 Reserve Deficit for Metallic Cable Accounts: Subscriber vs. Interoffice.
(Based Upon Company Proposals)

For subset of RBOCs that separately report subscriber & interoffice investment.*

(All values are in $000's)

	Metallic Cable Accounts				
	AERIAL	UNDERGND	BURIED	SUBMARINE	
	2421	2422	2423	2424	Total
Gross Book Value of Plant					
Subscriber	7,184,810	6,374,606	8,622,045	5,584	22,187,045
Interoffice	173,044	810,150	330,711	1,983	1,315,887
Depreciation Reserve					
Subscriber	3,350,069	2,870,434	3,936,890	4,428	10,161,821
Interoffice	144,315	608,950	209,936	1,430	964,632
Theoretical Reserve					
Subscriber	3,911,199	3,772,480	3,543,210	4,114	11,231,003
Interoffice	164,066	698,734	245,465	1,490	1,109,755
Reserve Deficit					
Subscriber	(561,130)	(902,046)	393,681	314	(1,069,182)
Interoffice	(19,751)	(89,784)	(35,529)	(59)	(145,124)

Sources: 1994 Theoretical Reserve Study filed by each RBOC with the FCC.

*Above table based on metallic cable accounts from the following RBOCs: NYNEX (2421, 22,23), Pacific Telesis (2421, 22, 23), Southwestern Bell (2422, 23), New England Bell (2424).

TABLE 11

1994 Reserve Deficit for Metallic Cable Accounts: Subscriber vs. Interoffice

Comparison of Reserve Deficit: Company Proposals vs FCC Prescribed.

For subset of RBOCs that separately report subscriber & interoffice investment.*

(All values are in $000's)

	Metallic Cable Accounts				
	AERIAL	UNDERGND	BURIED	SUBMARINE	
	2421	2422	2423	2424	Total
Reserve Deficit - Based on Company Proposals					
Subscriber	(561,130)	(902,046)	393,681	314	(1,069,182)
Interoffice	(19,751)	(89,784)	(35,529)	(59)	(145,124)
Reserve Deficit - Based on FCC Prescribed Values					
Subscriber	(297,799)	(349,885)	226,119	314	(421,251)
Interoffice	(23,483)	(139,955)	(35,619)	(59)	(199,116)
Difference					
Subscriber	(263,331)	(552,161)	167,562	0	(647,931)
Interoffice	3,732	50,170	90	0	53,993

Sources: 1994 Theoretical Reserve Study filed by each RBOC with the FCC.

*Above table based on metallic cable accounts from the following RBOCs: NYNEX (2421, 22,23), Pacific Telesis (2421, 22, 23), Southwestern Bell (2422, 23), New England Bell (2424).

TABLE 12

Comparison of Reserve Deficit for Metallic Cable vs All Categories: 1994 For Three RBOCs that Report Division Between Subscriber and Interoffice Cable.

Deficit under RBOC's Proposed Life and Salvage Values vs FCC's Prescribed Values.
(All values in $000's)

	Company Proposal	FCC Prescribed	Difference Between Two Measures $
Overall Reserve Deficit	(2,039,884)	(1,238,520)	(801,364)
Reserve Deficit on Subscriber Metallic Cable*	(1,069,182)	(421,251)	(647,931)
Reserve Deficit Excluding Subscriber Metallic Cable	(970,702)	(817,269)	(153,433)
Reserve Deficit on Subscriber Metallic Cable as a Percentage of Overall Reserve Deficit	52.41%	34.01%	80.85%

Sources: FCC Prescribed life and salvage values are from the 1994 Theoretical Reserve Study (TRS) filed by each RBOC with FCC. The company proposed life and salvage values are from the company proposal filed by each RBOC with its triennial depreciation study for the FCC. Plant investment and reserves are from the 1994 TRS.
Notes: Because for some RBOC states, both company proposed and FCC prescribed life and salvage values were not available, a small number of states' accounts had to be excluded from the analysis.
*Above table based on metallic cable accounts from the following RBOCs: NYNEX (2421, 22,23), Pacific Telesis (2421, 22, 23), Southwestern Bell (2422, 23), New England Bell (2424).

metallic cable accounts for both the RBOC and FCC parameter assumptions. Table 12 summarizes the results, and it shows that over 80% of the difference between the FCC and RBOC estimates of the reserve deficit is due to differences in subscriber cable accounts. (The total difference in reserve deficit is $801 million, and difference due to subscriber cable is $647.9 million.) In addition, about one-third of the reserve deficit based on FCC parameter assumptions is due to subscriber cable accounts, which, given the bias toward premature replacement of metal with fiber in the subscriber loop, may well be inappropriate relative to subsidy-free, stand-alone cost criteria for local service pricing.

Table 13 presents the same information for RBOC state operations that were represcribed in 1995, and for which the reserve deficit for subscriber metallic cable can be identified. About 75% of the difference in the reserve deficit between the RBOC proposals and the FCC represcription is accounted for by differences in subscriber cable. The total difference between the two measures of the reserve deficit is $711 million, and the difference in the reserve deficit for subscriber metallic cable is $535 million.

The RBOCs may object that they cannot provide investment plans for replacing metallic subscriber cable with fiber given the current legal uncertainty over when and how they might be allowed to offer new services that require fiber to the home. Absent such plans, the RBOCs may claim, the FCC will not approve shorter asset lives for subscriber metallic cable than is warranted by historical retirement data. While the factual predicate for the objection is hard to argue with, the objection itself has little merit (or relationship to the policy issues set out at the beginning of this paper). In order to be free of subsidy, the price for basic service should be no more than the

TABLE 13

Comparison of Reserve Deficit for Metallic Cable vs All Categories: 1995. For Two RBOCs that Report Division Between Subscriber and Interoffice Cable.

Deficit under RBOC's Proposed Life and Salvage Values vs FCC's Prescribed Values.

(All values in $000's)

	Company Proposal	FCC Prescribed	Difference Between Two Measures $
Overall Reserve Deficit	(1,418,900)	(707,866)	(711,034)
Reserve Deficit on Subscriber Metallic Cable*	(965,834)	(430,339)	(535,495)
Reserve Deficit Excluding Subscriber Metallic Cable	(453,065)	(277,527)	(175,538)
Reserve Deficit on Subscriber Metallic Cable as a Percentage of Overall Reserve Deficit	68.07%	60.79%	75.31%

Sources: Investment, reserves, prescribed service lives and net salvage from 1995 represcriptions.
Company proposed service lives and net salvage values from company proposals submitted during 1995 represcription.

*Above table based on metallic cable accounts from the following RBOCs: NYNEX--NY only (2421, 22,23) and Southwestern Bell (2422, 23).

costs of a stand-alone network providing only basic services[26]. If metallic cable is to be replaced by fiber in order to more efficiently serve the RBOCs' basic telephone customers, current FCC policy would not present an obstacle. The RBOCs can simply provide an investment plan, and if that calls for faster retirement of metallic cable than historical trends would suggest, the FCC's practice would be to approve the request. If the replacement of metallic cable is largely motivated by a desire to provide new non-telephony services, the RBOCs' problem may be that they are reluctant to commit to an investment plan, given the legal uncertainty over what additional services they can sell and what rules will govern competition in the market place. But this has nothing to do with the appropriate depreciation expense for a stand-alone basic service local telephone company. To the extent replacing metal with fiber cannot be justified for basic local service, the costs of the change should be borne by customers of non-basic service. Granting larger depreciation expense today to finance early replacement of metal with fiber would require basic service customers to subsidize customers of non-basic services.[27]

---

[26]For the classic modern derivation of this proposition, see Gerald Faulhaber, "Cross-Subsidization: Pricing in Public Enterprise," *American Economic Review 65: 966-977.*

[27]As noted above, the subsidy would likely be exacerbated when the fiber plant is in place if the "accounting protections" against cross-subsidy adopted by the FCC in Docket 86-111 (for costs common to regulated and unregulated services) are adopted here. Docket 86-111 calls for allocation of common plant costs in proportion to relative use. VDT rules leave it up to the RBOC to propose the allocation method. It may be based on relative usage but need not be. See Docket 87-266. However, the FCC's prior acceptance of relative use allocations of common capital costs is troubling if applied to the investments necessary to enable local telephone companies to provide video dial tone and other non-basic services. This could well cause basic service customers to pay the lion's share of the capital charges for the new plant in the early years, even if the change in plant was entirely caused by the RBOCs'desire to compete in non-basic services.

Difference Between FCC and State PUC Measures of the Book Depreciation Reserve

One limitation of estimates of the reserve deficit based upon the FCC's accounting data is that since *Louisiana PSC*, states have not been required to follow the same depreciation practices as the FCC.[28] Moreover, the FCC requires the RBOCs to report their book depreciation reserves to the FCC as if FCC depreciation rates had been utilized consistently throughout time for all the carrier's assets (both interstate and intrastate). If states have been setting lower depreciation rates than the FCC, the actual value of the book depreciation reserve will be lower than reported in the FCC's depreciation studies. This is especially true because roughly 75% of carriers' plant is intrastate and only 25% is interstate.

In Table 14, the extent of this potential bias is examined. The data on total (intrastate and interstate) book depreciation reserves using both the FCC and state (SPUC) reporting methods is from tables the carriers file with the depreciation studies. Because only 1/3 of the carriers file a depreciation study in any year, the most recent year with complete data for all RBOC states is 1992. As Table 14 indicates, the difference between the book depreciation reserve as reported on the FCC basis and the reserve as reported on the state basis is approximately $4 billion dollars.[29] The interstate portion of the FCC book reserve for the RBOCs in 1992 was 25.31% of total reserves (ARMIS 43-01). Thus, if we adjust for the relative shares of the book reserve accounted

---

[28]Louisiana Public Service Commission v. FCC, 106 S. Ct. 1890 (1986).

[29]The numbers in Table 14 slightly understate book reserves because they are sometimes based on preliminary estimates of the depreciation reserve. The extent of this bias appears very small, however. The Statistics of Common Carriers, 1992 reports the RBOCs' book reserve in 1992 to be $78.1 billion dollars (on the FCC basis) vs.the $77.2 billion reported in Table 13. This is an understatement of only 1.1%.

TABLE 14

FCC and State Depreciation Reserve for RBOCs -- 1992.

CUMMULATIVE DEPRECIATION RESERVE (12/31/92)

FCC BASIS	STATE BASIS	DIFFERENCE	Difference Adjusted for Interstate Factor
77,170,426,169	73,166,146,894	4,004,279,275	3,025,045,475

Sources: FCC and SPUC basis from Attachment V to depreciation studies filed by RBOCs with FCC from 1993-1995.

Note: The intrastate weight was equal to 1 minus the interstate weight of 25.31%. This overstates the influence of intrastate reserves because 1.59% of the total reserves in ARMIS is classified into categories other than interstate or intrastate.

for by interstate vs. intrastate jurisdictions, the difference between the book reserve on the FCC basis and the actual book reserve is about $3 billion dollars, or 1.6% of the gross book value of plant.[30]

Given the magnitude of the difference between the book reserve as reported on the FCC vs. the state basis, it is natural to wonder whether this difference is increasing or decreasing over time. If it was increasing, this could be indirect evidence that FCC and state depreciation practices are becoming more divergent. Conversely, if the difference between the two was declining, it could indicate the converse. As Table 15 demonstrates, over the period from 1990 to 1994, the difference between the FCC and state book reserves for states represcribed in 1995 declined from $2.2 billion to $1.8 billion, and, as a fraction of the gross book value of plant, it declined from 2.5% to 1.7%.[31] Thus, the difference between the FCC and state book reserve appears to be declining over time both in absolute and relative terms.

Table 15 also illustrates that the book reserve ratio (the ratio of the book reserve to the gross book value of plant) has been increasing rapidly at both the federal and state level. From 1990 to 1994, the book reserve ratio on the FCC basis increased from 35.5% to 44.3%. On the state basis, it increased from 33.0% to 42.6%. Moreover, if one was to accept the Commission's

---

[30]The $3 billion estimate may be a slight overstatement of the true difference because we have treated all reserves that are not in the interstate jurisdiction as being part of the intrastate jurisdiction. However, ARMIS 43-01 for 1992 reports that 1.59% of the RBOCs' book reserves are classified in other jurisdictions, such an non-regulated, other adjustments, or intracompany adjustments.

[31]Table 15 includes only the RBOC states that underwent represcription in 1995 because these are the only states for which complete data was available for the period from 1990-1994. These states account for over 50% of the gross book value of total RBOC plant.

TABLE 15

Trends in FCC and State Depreciation Reserves.

	Gross Book Value	Cummulative Depreciation Reserve				Book Reserve Ratio		
		FCC	STATE	DIFFERENCE ($)	DIFFERENCE % of GBV	FCC (MR BASIS)	SPUC (SR BASIS)	Difference
12/94	104,706,869,427	46,365,118,124	44,559,652,017	1,805,466,107	1.72%	44.3%	42.6%	1.7%
12/92	97,791,248,193	39,335,466,130	37,153,545,750	2,181,920,380	2.23%	40.2%	38.0%	2.2%
12/90	89,889,498,957	31,886,333,032	29,650,477,796	2,235,855,236	2.49%	35.5%	33.0%	2.5%

Note: Above table is for RBOC states that were represcribed in 1995.